UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/648,012	08/26/2003	C. Earl Woolfork	73785-013	3337

33401 7590 05/17/2006

MCDERMOTT, WILL & EMERY (LOS ANGELES OFFICE)
2049 CENTURY PARK EAST
34TH FLOOR
LOS ANGELES, CA 90067-3208

EXAMINER	
FLANDERS, ANDREW C	

ART UNIT	PAPER NUMBER
2615	

DATE MAILED: 05/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/648,012	WOOLFORK, C. EARL	
	Examiner	Art Unit	
	Andrew C. Flanders	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4 and 6-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4 and 6-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *17 March 2006* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 17 March 2006 has been entered.

Response to Arguments

Applicant's arguments filed 17 March 2006 have been fully considered but they are not persuasive.

Applicant alleges:

> "Moreover, a prima facie case of obviousness was not made because the references do not teach or suggest the limitation directed to an analog battery-powered digital transmitter. The office action provides that the combination of Alstatt and Schotz's '343 Patent teaches a battery powered digital transmitter. Applicant respectfully submits that a prima facie case of obviousness has not been made. More particularly, the combination of the battery-powered analog transmitter of Alstatt and the wall-powered digital transmitter of Schotz '343 would render Alstatt unsatisfactory for its intended purpose. Alstatt would suffer from a significantly reduced play time due to the power consumption of Schotz's numerous integrated circuits. Moreover, the Alstatt headphones for his

> portable device would be rendered too large because of the size of the integrated circuits used in Schotz."

Examiner respectfully disagrees with this allegation. The combination of Alstatt in view of Schotz does teach an analog batter-powered digital transmitter as shown on page 6 and 8 of the previous office action. Alstatt discloses a analog battery powered transmitter (14) while Schotz discloses a digital transmitter (22).

Applicant's further allegations that the wall-powered digital transmitter in Schotz would render Alstatt unsatisfactory are unfounded. Neither Schotz nor Alstatt gives any indication as to the power requirements of the various components used in the combination. As such, the Examiner can find no evidence that Alstatt would suffer from a significantly reduced play time due to the power consumption of Schotz's numerous integrated circuits. If Applicant is in possession (and wishes to maintain this argument) of such evidence, detailing the power requirements of the components used in the combination, the Examiner respectfully requests these documents.

Applicant states:

> "New limitations have been added to the new Claims 8-13, as discussed in Applicant's Examiner interview. New Claims 8 and 9 have been added to recite a channel decoder that permits soft-decision decoding. New Claims 10-1 1 have been added to recite a channel decoder that is a Viterbi decoder. (For further clarification, Claim 10, directed to the system, includes a limitation that the channel encoder is configured to send encoded symbols that are compatible with a Viterbi decoder). The specification has also been amended to recite that the channel decoder may be a Viterbi decoder. This material was present in the parent application to which the present application claims priority. (See page 4, line 27 of the parent application)."

The details of the Viterbi decoder are present in the cited reference given by the applicant. However, the limitation of the soft-decision decoding is not present in either of the disclosures. While it is known that the Viterbi decoder is able to perform soft-decision decoding, the disclosure's relied upon lack sufficient description for one of ordinary skill in the art to reproduce this implementation.

Applicant's remaining arguments have been considered but are moot in view of the new ground(s) of rejection necessitated by Applicant's amendments.

Drawings

New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because Figure 2 incorporates new matter, which is prohibited by 37 CFG 1.121(f).

The drawings submitted 17 March 2006 show the code generator (60) and spread spectrum demodulator (62) integrated to form the direct conversion receiver 56. A 2.4 GHz direct conversion receiver is not previously disclosed including these two elements as shown in the present drawings and thus create a new matter situation. A direct conversion receiver (56) is shown in the parent application's drawings (Fig. 3

element 56) but the demodulator (62) and code generator (60) are shown as separate components.

Specification

The amendment filed 17 March 2006 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows:

1. "A channel decoder 66 may be in communication with the band pass filter."

Examiner is unable to find a basis for this in either the specification or the drawings. In the parent application the decoder (66) is not directly connected to the band pass filter (54) and thus cannot be in communication with it. Additionally the decoder and BPF in Fig. 3 of the present application are not shown to be in communication with each other as there exists a fuzzy logic detector (61) between.

2. "The received spread spectrum signal may be communicated to a 2.4 GHz direct conversion receiver 56."

The new drawings submitted 17 March 2006 show the code generator (60) and spread spectrum demodulator (62) integrated to form the direct conversion receiver 56.

A 2.4 GHz direct conversion receiver is not previously disclosed including these two elements as shown in the present drawings and thus create a new matter situation. A direct conversion receiver (56) is shown in the parent application's drawings (Fig. 3 element 56) but the demodulator (62) and code generator (60) are shown as separate components.

3. "A frequency shift keying (FSK) modulation/detection technique could be used given a frequency hopping spread spectrum (FHSS) system choice."

The terms and techniques disclosed in this sentence (FSK and FHSS) were not present in the parent disclosure nor in the current application's disclosure and thus are new matter.

4. "The direct conversion receiver 56 may provide a means to convert the received signal while using timing and synchronization to capture the correct bit sequence embedded in the received spread spectrum signal."

The means to convert has previously only be described as a down conversion processes in the parent application (paragraphs 15 and 16). The phrase "means to convert" implies other forms of conversion in addition to the down conversion thus creating a new matter situation.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 4, 6, ~~8, 9,~~ 10, ~~12 and 13~~ are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The newly added limitation of "a unique hop pattern for each individual user" is not supported in the disclosure of neither the present application nor the parent application. The relied upon disclosures teach generating a unique user code with one user but do not disclose any details on creating a unique "hop pattern" for each individual user.

Claims 12 and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The newly added limitation of "a 2.4 GHz direct conversion receiver that includes a spread spectrum communication demodulator

and a receiver code generator" is not supported in the disclosure of neither the present application nor the parent application. These components were only disclosed in the parent application's fig. 2 in which they are shown as discrete components.

Claim 8 and 9 are rejected under 35 U.S.C. 112, first paragraph, as based on a disclosure which is not enabling. Claims 8 and 9 recite a limitation of a channel decoder that is configured to perform soft-decision decoding which is considered to be critical or essential to the practice of the invention, but is not enabled by the disclosure.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim~~1 is~~ 1,4,6-9 and 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Alstatt (U.S. Patent 5,771,441) in view of Schotz (U.S. Patent 5,946,343) and in further view of Schotz (U.S. Patent 5,491,839) and in further view of Rozin (U.S. Patent 6,342,844)

Regarding **Claim 1**,

Alstatt teaches an audio dongle for an utilizes a RF connection to interface portable audio device a pair of wireless headphones.

Specifically regarding Claim Alstatt teaches:

A wireless audio music system (Figure 1) for communication of an audio music signal (from 10) from the analog headphone jack (12) connected to a battery powered transmitter (14) and received by a battery powered headphone receiver (col. 4 lines 29-53; battery transmitter 43 col. 6, line 54; battery for headphone receiver is implicit the wireless nature of the headphones and context Alstatt) comprising:

an analog headphone jack (12) from an audio music source (10) in communication with a batter powered digital transmitter (14) (col. 4 lines 29 – 39)

The headphone system of Altstatt includes an antenna (24), receiver (22) and earphones 26 and 28.

However, the system of Altstatt an analog transmission system that, operation, lacks the benefits digitally encoded and transmitted audio signal.

With regard to the limitations of Claim 1, Altstatt does not clearly teach or suggest:

A wireless digital audio music system for spread spectrum communication

said battery powered digital transmitter converts an analog audio music signal from said existing analog headphone jack to a digital signal using an ADC in communication with an encoder

said encoder in communication with a channel encoder

said digital modulator in communication with a spread spectrum communication modulator that utilizes a code generator to create a unique hop pattern for each individual user;

said spread spectrum communication modulator in communication modulator in communication with a transmit antenna that transmits a radio frequency of approximately 2.4 GHZ for receipt by a receiving antenna;

said receiving antenna in communication with a spread spectrum communication demodulator

said spread spectrum communication demodulator in communication with a receiver code generator and with a digital demodulator;

said digital demodulator in communication with a wide bandpass filter

said wide bandpass filter in communication with a channel decoder;

said channel decoder in communication with a receiver decoder;

said DAC in communication with a filter to pass the analog music signal in the approximate frequency band of 20Hz to 20 kHz; and

said filter passing analog music signal will be amplified for processing to a speaker headphone set to provide high quality music for listening by a signal user wearing the headphones.

Schotz et al discloses a wireless digital audio transmission system.

Specifically regarding Claim 1, Schotz et al, when considered in view of the teachings of Altstatt applied above, teaches or at least suggests:

A wireless digital audio music system for spread spectrum communication (Figure 1 of Schott et al in view of Figure 1 of Altstatt, col. 6, lines 6-54; col. 14, lines 5-12)

said digital transmitter (22 of Schotz et al in view of 14 of Altstatt) converts an analog audio music signal from said existing analog headphone jack (analog input 30A,30B of Schott et al in view of analog connection 12,18 of Altstatt) to a digital signal using an ADC (52) in communication with an encoder (300) (col. 7, lines 6-15; col. 14, lines 43-58, as noted above `in communication' has been interpreted herein to mean passing a signal between the two components, regardless of other components that may be disposed between two said components)

said encoder (300) in communication with a channel encoder (98) (col. 9, lines 1-48; col. 14, lines 61-65)

said digital modulator (102) in communication with a spread spectrum communication modulator (104) that utilizes a code generator (106,308) (102 modulates input signal to produce I,Q signals, col. 10, lines 17-24; spread spectrum, col. 14, lines 5-12, col. 15, lines 40-52; code generator and user code corresponds to either house select code or PN code, col. 10, lines 43-47 or col. 15, lines 40-52; either can be considered to generate `user codes' in context of Schotz et al and particularly Altstatt in that the use of a transmitter corresponds to a particular user operating said transmitter);

said spread spectrum communication modulator (104) in communication (via 108) with a transmit antenna (38) that transmits at a radio frequency of approximately 2.4 GHz for receipt by a receiving antenna (40) (col. 6, lines 39-42; col. 10, lines 31-37)

said receiving antenna (40) in communication with a spread spectrum communication demodulator (comprising 144,146,148; col. 11, line 13 - col. 12, line 24; col. 15, lines 45-52)

said spread spectrum communication demodulator (144,146,148) in communication with a receiver code generator (408 or house code generator, col. 11, lines 13-56; col. 15, lines 45-52) and with a digital demodulator (202)(202 reverses phase shift modulation and combines signals, col. 12, lines 41-47);

said digital demodulator (202) in communication with a wide bandpass filter (such as 138 or 142 or 178, via components of 140,146) (col. 11, lines 14-24, col. 12, lines 1-11, noting that audio signals require wideband transmission col. 2, lines 58-60, which infers such a wideband nature on these filters);

said wide bandpass filter (such as 138 or 142 or 178) in communication (via components of 140,146) with a channel decoder (198) (col. 12, lines 1-28);

said channel decoder (198) in communication with a receiver decoder (400)(col. 15, lines 10-18);

said receiver decoder (400)in communication with a DAC (216) (col. 15, lines 10-26);

said DAC (216) in communication with a filter (218A,2185) to pass the analog music signal in the approximate frequency band of 20Hz to 20 kHz (signal is music, col. 2, lines 55-58; filtering col. 13, lines 57-67)

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to modify the wireless audio system of Altstatt to incorporate the

digital transmission and reception scheme of Schotz et al for the wireless communication of full range audio data. The motivation behind such a modification would have been that such a digital transmission would have provided a number of benefits, including the reception of CD-quality sound and forwarding error correction, the latter of which would have enabled the system to account for errors in transmission. The digital-based system of Schotz et al would have also enabled the option of muting the output signal in the presence of sufficient levels of error. The spread spectrum technique of Schotz et al would have also limited interference from another signal to cause error in only one portion of the transmitted signal rather than the entire signal. Further, the transmission components of Schotz et al would have also permitted transmission over unlicensed frequency bands.

while the system of Altstatt in view of Schotz et al discloses a variety of filtering and other signal modifications, Altstatt in view of Schotz et al is not considered to clearly teach or suggest:

said channel encoder in communication with a digital low pass filter

said digital low pass filter in communication with a digital modulator

said DAC in communication with a filter that is a low pass filter

said filter passing analog music signal will be amplified for processing to a speaker headphone set to provide high quality music for listening by a single user wearing the headphones

However, Schotz et al incorporates another digital wireless system by reference, issued to Schotz.

Specifically regarding the limitations of Claim 1, Schotz, in view of the teachings of Altstatt and Schotz et al as applied above, teaches or at least suggests:

said channel encoder (300 of Schotz et al) in communication with a digital low pass filter (60 of Schotz)(col. 6, lines 41-53 of Schotz for lowpass filtering buffer 60, in view of modification listed below)

said digital low pass filter (60) in communication with a digital modulator (102 of Schotz et al)(col. 6, lines 41-53 of Schotz for lowpass filtering buffer 60, in view of modification listed below)

said DAC (216 of Schotz at al, which provides output signal) in communication with a filter that is a low pass filter (152 of Schotz in view of 218A, B of Schotz et al)

said filter (152) passing analog music signal will be amplified (by 156) for processing to a speaker headphone set (Figure 1 of Schotz, in view of headphones of Altstatt) to provide high quality music for listening by a single user wearing the headphones (col. 4, lines 2-5; col. 10, lines 19-22, noting that signal expansion is one form of amplitude control; it is further noted that otherwise output amplifying an audio signal for application to speakers is substantially well-known in the art).

To one of ordinary skill in the art at the time the invention was made, it would have been obvious to incorporate the low-pass filtering buffer of Schotz as part of the circuitry processing the output signal of the ADC (that is, as part of the signal path following the ADC) in the transmitter of Altstatt in view of Schatz et al. The motivation behind such a modification would have been that such a filtering buffer would have removed high frequency harmonics resulting from the multiplexing of the signal in the

ADC. To one of ordinary skill in the art at the time the invention was made, it would have been obvious to incorporate low pass filtering as taught by Schotz for the output filters of Altstatt in view of Schotz et al. The motivation behind such a modification would have been that such low pass filtering would have enabled the removal of any pilot or multiplexing byproducts yet present in the output signal. To one of ordinary skill in the art at the time the invention was made, it would have been obvious to incorporate the compression and expansion circuitry of Schotz as part of the input and output handling circuitry of the system of Altstatt in view of Schotz et al. The motivation behind such a modification would have been that such a form of signal amplitude control would have placed the throughput audio signals within the linear operating ranges of the audio channels in the transmitter and receiver.

Additionally, the combination shown above fails to explicitly disclose that the code generator creates a unique hop pattern for each individual user. As shown above, the Schotz reference in the combination discloses a code generator (106,308).

While it is not taught to use a unique hop pattern for each individual user, doing so in a FHSS implementation (which is suggested by Schotz; col. 14 lines 5 – 12) is notoriously well known in the art.

Rozin discloses a code generator that creates a unique hop pattern for each individual user (col. 9 lines 52 – 67 and col. 10 lines 1 – 27).

While Rozin is not directed to the digital audio art, since FHSS is used, the data that is coded is irrelevant. It would have been obvious to one of ordinary skill in the art to apply Rozin's teachings to the combination disclosed above. One would have been

motivated to do so to avoid interference, collisions, and interceptions (col. 10 lines 13 – 17 of Rozin) between the various devices in the household disclosed by Schotz.

Regarding **Claim 4**, please refer above to the functions-corresponding to the components cited above in the rejection of the similar limitations of Claim 1. The citations provided therein form the basis for the rejection of the similar limitations of the method steps of Claim 4. In addition, the claimed power level and distance of approximately 10 ft is at least considered suggested by Schott et al's reference to a range within 10 ft (col. 5, lines 26-36).

Regarding **Claim 6**, please refer above to the components cited above in the rejection of the similar limitations of Claim 1, particularly the first portion of Claim 1. The citations provided therein form the basis for the rejection of the similar limitations of the apparatus of Claim 6.

Regarding **Claim 7**, please refer above to the components cited above in the rejection of the similar limitations of Claim 1, particularly the first portion of Claim 1. The citations provided therein form the basis for the rejection of the similar limitations of the apparatus of Claim 7.

Regarding **Claim 8**, please refer above to the components cited above in the rejection of the similar limitations of Claim 1. The citations provided therein form the basis for the rejection of the similar limitations of the system of claim 8.

However, the combination in claim 1 does not disclose that the channel decoder is configured to perform soft-decision decoding.

The Examiner takes Official notice that soft decision Viterbi decoders are notoriously well known in the art (See wikipedia.com entries for Viterbi decoder and Viterbi Algorithm). Applying the teachings of these entries to the combination reads upon the limitation of the channel decoder is configured to perform soft-decision decoding.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination's decoder to perform as a soft-decision Viterbi decoder. Viterbi decoders or often used in telecommunication lines and for amateur radio and radio relay (see wikipedia Viterbi entries). It would be an advantage to use the Viterbi decoder in the combinations circuitry because Viterbi decoding has an advantage of a fix decoding time making it well suited for hardware decoder implementation (Flemming).

Regarding **Claim 9**, please refer above to the components cited above in the rejection of the similar limitations of Claim 7. The citations provided therein form the basis for the rejection of the similar limitations of the apparatus of Claim 9.

However, the combination in claim 7 does not disclose that the channel decoder is configured to perform soft-decision decoding.

The Examiner takes Official notice that soft decision Viterbi decoders are notoriously well known in the art (See wikipedia.com entries for Viterbi decoder and Viterbi Algorithm). Applying the teachings of these entries to the combination reads upon the limitation of the channel decoder is configured to perform soft-decision decoding.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination's decoder to perform as a soft-decision Viterbi decoder. Viterbi decoders or often used in telecommunication lines and for amateur radio and radio relay (see wikipedia Viterbi entries). It would be an advantage to use the Viterbi decoder in the combinations circuitry because Viterbi decoding has an advantage of a fix decoding time making it well suited for hardware decoder implementation (Flemming).

Regarding **Claim 9**, please refer above to the components cited above in the rejection of the similar limitations of Claim 1. The citations provided therein form the basis for the rejection of the similar limitations of the apparatus of Claim 9.

However, the combination in claim 1 does not disclose that the channel encoder is configured to send encoded symbols that are compatible with a Viterbi decoder or that the deocer is a Viterbi decoder.

The Examiner takes Official notice that soft decision Viterbi decoders are notoriously well known in the art (See wikipedia.com entries for Viterbi decoder and Viterbi Algorithm). Applying the Viterbi decoding method disclosed in these entries would read upon the limitations of the channel encoder is configured to send encoded symbols that are compatible with a Viterbi decoder or that the deocer is a Viterbi decoder.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination's decoder to perform as a soft-decision Viterbi decoder. Viterbi decoders or often used in telecommunication lines and for amateur radio and radio relay (see wikipedia Viterbi entries). It would be an advantage to use the Viterbi decoder in the combinations circuitry because Viterbi decoding has an advantage of a fix decoding time making it well suited for hardware decoder implementation (Flemming).

Regarding **Claim 11**, please refer above to the components cited above in the rejection of the similar limitations of Claim 9. The citations provided therein form the basis for the rejection of the similar limitations of the apparatus of Claim 11.

Regarding **Claim 12**, please refer above to the components cited above in the rejection of the similar limitations of Claim 1. The citations provided therein form the basis for the rejection of the similar limitations of the apparatus of Claim 12.

In addition, the combination further discloses a 2.4 GHz direct conversion receiver that includes a spread spectrum communication demodulator and a receiver code generator (Schotz elements 40, 106,308, 144,146,148; col. 11, line 13 - col. 12, line 24; col. 15, lines 45-52).

Regarding **Claim 13**, please refer above to the components cited above in the rejection of the similar limitations of Claim 7. The citations provided therein form the basis for the rejection of the similar limitations of the apparatus of Claim 13.

In addition, the combination further discloses a 2.4 GHz direct conversion receiver that includes a spread spectrum communication demodulator and a receiver code generator (Schotz elements 40, 106,308, 144,146,148; col. 11, line 13 - col. 12, line 24; col. 15, lines 45-52).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew C. Flanders whose telephone number is (571) 272-7516. The examiner can normally be reached on M-F 8:30 - 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sinh Tran can be reached on (571) 272-7546. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

acf

SINH TRAN
SUPERVISORY PATENT EXAMINER